

SEQUENCE LISTING

<110> Blackwell, T. Keith
An, Jae Hyung

<120> SKN-1 GENE AND PROTEINS

<130> 10276-093US1

<140> US 10/560,563

<141> 2005-12-12

<150> PCT/US2004/19046

<151> 2004-06-14

<150> US 60/478,185

<151> 2003-06-13

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<213> *Caenorhabditis elegans*

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<213> *Caenorhabditis elegans*

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<213> *Caenorhabditis elegans*

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<213> *Caenorhabditis elegans*

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<213> *Caenorhabditis elegans*

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65          70          75          80
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115         120         125
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130         135         140
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145         150         155         160
Cys Thr Thr Asp Ser Ser Ser Thr Cys Ser Arg Leu Ser Ser Glu Ser
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Pro Arg Tyr Thr Ser Glu Ser Ser Thr Gly Thr His Glu Ser Arg Phe
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195         200         205
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Leu Ala Ser Asp Asn Glu Leu Pro Val Ser Ala Phe Gln Ile Ser Glu
245         250         255
Met Ser Leu Ser Glu Leu Gln Gln Val Leu Lys Asn Glu Ser Leu Ser
260         265         270
Glu Tyr Gln Arg Gln Leu Ile Arg Lys Ile Arg Arg Arg Gly Lys Asn
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 <212> DNA
 <213> *Caenorhabditis elegans*

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<211> 623

<212> PRT

<213> *Caenorhabditis elegans*

<400> 10

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          35          40          45
Ile Leu Ala Thr Ser Ser Leu Ile Leu Val Ile Ser Ser Pro Ser Ser
          50          55          60
Asn Thr Ser Ile Gln Ser Ser Ser Tyr Asp Arg Ile Thr Thr Lys His
65          70          75          80
Leu Leu Asp Asn Ile Ser Pro Thr Phe Lys Met Tyr Thr Asp Ser Asn
          85          90          95
Asn Arg Asn Phe Asp Glu Val Asn His Gln His Gln Gln Glu Gln Asp
          100          105          110
Phe Asn Gly Gln Ser Lys Tyr Asp Tyr Pro Gln Phe Asn Arg Pro Met
          115          120          125
Gly Leu Arg Trp Arg Asp Asp Gln Arg Met Met Glu Tyr Phe Met Ser
          130          135          140
Asn Gly Pro Val Glu Thr Val Pro Val Met Pro Ile Leu Thr Glu His
145          150          155          160
Pro Pro Ala Ser Pro Phe Gly Arg Gly Pro Ser Thr Glu Arg Pro Thr
          165          170          175
Thr Ser Ser Arg Tyr Glu Tyr Ser Ser Pro Ser Leu Glu Asp Ile Asp
          180          185          190
Leu Ile Asp Val Leu Trp Arg Ser Asp Ile Ala Gly Glu Lys Gly Thr
          195          200          205
Arg Gln Val Ala Pro Ala Asp Gln Tyr Glu Cys Asp Leu Gln Thr Leu
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Thr Glu Lys Ser Thr Val Ala Pro Leu Thr Ala Glu Glu Asn Ala Arg
225          230          235          240

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Ile	Lys	Thr	Pro	Thr	Leu	Glu	His	Pro	Thr	Gln	Lys	Ala	Glu	Leu	Glu	
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Arg	Glu	Glu	Gly	Gln	Leu	Asn	Gln	Leu	Phe	Asp	Asn	Lys	Gln	Gln	His	
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Ala	Asn	Leu	Thr	Glu	Met	Gln	Glu	Met	Arg	Asp	Ser	Cys	Asn	Gln	Val	
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Phe	Asn	Val	Thr	Asp	Ser	Gln	Thr	Val	Glu	Gln	Trp	Leu	Pro	Thr	Glu	
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			405						410					415		
Tyr	Asp	His	Ser	Tyr	Gln	Ser	Thr	Gly	Gln	Thr	Pro	Leu	Ser	Pro	Leu	
		420						425					430			
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		435					440					445				
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Thr	Cys	Ser	Arg	Leu	Ser	Ser	Glu	Ser	Pro	Arg	Tyr	Thr	Ser	Glu	Ser	
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Arg	Gly	Arg	Gln	Ser	Lys	Asp	Glu	Gln	Leu	Ala	Ser	Asp	Asn	Glu	Leu	
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<210> 11

<211> 23

<212> PRT

<213> Caenorhabditis elegans

<400> 11

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 <213> *Caenorhabditis elegans*

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cttct	ggaca	atatat	cacc	gacatt	ttaaa	atgtac	acgcg	acagca	ataa	tagga	acttt	300
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 <211> 420

<212> PRT

<213> Homo sapiens

<400> 13

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Leu	Val	Ala	Ile	Lys	Lys	Val	Leu	Gln	Asp	Lys	Arg	Phe	Lys	Asn	Arg
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Glu	Leu	Gln	Ile	Met	Arg	Lys	Leu	Asp	His	Cys	Asn	Ile	Val	Arg	Leu
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Arg	Tyr	Phe	Phe	Tyr	Ser	Ser	Gly	Glu	Lys	Lys	Asp	Glu	Val	Tyr	Leu
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Asn	Leu	Val	Leu	Asp	Tyr	Val	Pro	Glu	Thr	Val	Tyr	Arg	Val	Ala	Arg
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His	Tyr	Ser	Arg	Ala	Lys	Gln	Thr	Leu	Pro	Val	Ile	Tyr	Val	Lys	Leu
145					150					155					160
Tyr	Met	Tyr	Gln	Leu	Phe	Arg	Ser	Leu	Ala	Tyr	Ile	His	Ser	Phe	Gly
				165					170					175	
Ile	Cys	His	Arg	Asp	Ile	Lys	Pro	Gln	Asn	Leu	Leu	Leu	Asp	Pro	Asp
			180					185					190		
Thr	Ala	Val	Leu	Lys	Leu	Cys	Asp	Phe	Gly	Ser	Ala	Lys	Gln	Leu	Val
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Pro	Glu	Leu	Ile	Phe	Gly	Ala	Thr	Asp	Tyr	Thr	Ser	Ser	Ile	Asp	Val
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Trp	Ser	Ala	Gly	Cys	Val	Leu	Ala	Glu	Leu	Leu	Leu	Gly	Gln	Pro	Ile
				245				250						255	
Phe	Pro	Gly	Asp	Ser	Gly	Val	Asp	Gln	Leu	Val	Glu	Ile	Ile	Lys	Val
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Leu	Gly	Thr	Pro	Thr	Arg	Glu	Gln	Ile	Arg	Glu	Met	Asn	Pro	Asn	Tyr
		275					280					285			
Thr	Glu	Phe	Lys	Phe	Pro	Gln	Ile	Lys	Ala	His	Pro	Trp	Thr	Lys	Val
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Phe	Arg	Pro	Arg	Thr	Pro	Pro	Glu	Ala	Ile	Ala	Leu	Cys	Ser	Arg	Leu
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Leu	Glu	Tyr	Thr	Pro	Thr	Ala	Arg	Leu	Thr	Pro	Leu	Glu	Ala	Cys	Ala
				325					330					335	
His	Ser	Phe	Phe	Asp	Glu	Leu	Arg	Asp	Pro	Asn	Val	Lys	Leu	Pro	Asn
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420

<210> 14
 <211> 483
 <212> PRT
 <213> Homo sapiens

<400> 14

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			20					25					30		
Gly	Gly	Gly	Pro	Gly	Gly	Ser	Ala	Ser	Gly	Pro	Gly	Gly	Thr	Gly	Gly
		35					40					45			
Gly	Lys	Ala	Ser	Val	Gly	Ala	Met	Gly	Gly	Gly	Val	Gly	Ala	Ser	Ser
	50					55					60				
Ser	Gly	Gly	Gly	Pro	Gly	Gly	Ser	Gly	Gly	Gly	Gly	Ser	Gly	Gly	Pro
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Gly	Ala	Gly	Thr	Ser	Phe	Pro	Pro	Pro	Gly	Val	Lys	Leu	Gly	Arg	Asp
				85					90					95	
Ser	Gly	Lys	Val	Thr	Thr	Val	Val	Ala	Thr	Leu	Gly	Gln	Gly	Pro	Glu
			100					105					110		
Arg	Ser	Gln	Glu	Val	Ala	Tyr	Thr	Asp	Ile	Lys	Val	Ile	Gly	Asn	Gly
		115					120					125			
Ser	Phe	Gly	Val	Val	Tyr	Gln	Ala	Arg	Leu	Ala	Glu	Thr	Arg	Glu	Leu
	130					135					140				
Val	Ala	Ile	Lys	Lys	Val	Leu	Gln	Asp	Lys	Arg	Phe	Lys	Asn	Arg	Glu
145					150					155					160
Leu	Gln	Ile	Met	Arg	Lys	Leu	Asp	His	Cys	Asn	Ile	Val	Arg	Leu	Arg
				165					170					175	
Tyr	Phe	Phe	Tyr	Ser	Ser	Gly	Glu	Lys	Lys	Asp	Glu	Leu	Tyr	Leu	Asn
			180					185					190		
Leu	Val	Leu	Glu	Tyr	Val	Pro	Glu	Thr	Val	Tyr	Arg	Val	Ala	Arg	His
		195					200					205			
Phe	Thr	Lys	Ala	Lys	Leu	Thr	Ile	Pro	Ile	Leu	Tyr	Val	Lys	Val	Tyr
	210					215					220				
Met	Tyr	Gln	Leu	Phe	Arg	Ser	Leu	Ala	Tyr	Ile	His	Ser	Gln	Gly	Val
225					230					235					240
Cys	His	Arg	Asp	Ile	Lys	Pro	Gln	Asn	Leu	Leu	Val	Asp	Pro	Asp	Thr
				245					250					255	
Ala	Val	Leu	Lys	Leu	Cys	Asp	Phe	Gly	Ser	Ala	Lys	Gln	Leu	Val	Arg
			260					265					270		
Gly	Glu	Pro	Asn	Val	Ser	Tyr	Ile	Cys	Ser	Arg	Tyr	Tyr	Arg	Ala	Pro
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Glu	Leu	Ile	Phe	Gly	Ala	Thr	Asp	Tyr	Thr	Ser	Ser	Ile	Asp	Val	Trp
	290					295					300				
Ser	Ala	Gly	Cys	Val	Leu	Ala	Glu	Leu	Leu	Leu	Gly	Gln	Pro	Ile	Phe
305					310					315					320
Pro	Gly	Asp	Ser	Gly	Val	Asp	Gln	Leu	Val	Glu	Ile	Ile	Lys	Val	Leu
				325					330					335	
Gly	Thr	Pro	Thr	Arg	Glu	Gln	Ile	Arg	Glu	Met	Asn	Pro	Asn	Tyr	Thr
			340					345					350		
Glu	Phe	Lys	Phe	Pro	Gln	Ile	Lys	Ala	His	Pro	Trp	Thr	Lys	Val	Phe
		355					360					365			
Lys	Ser	Arg	Thr	Pro	Pro	Glu	Ala	Ile	Ala	Leu	Cys	Ser	Ser	Leu	Leu
						375					380				

Glu	Tyr	Thr	Pro	Ser	Ser	Arg	Leu	Ser	Pro	Leu	Glu	Ala	Cys	Ala	His
385					390					395					400
Ser	Phe	Phe	Asp	Glu	Leu	Arg	Cys	Leu	Gly	Thr	Gln	Leu	Pro	Asn	Asn
				405					410					415	
Arg	Pro	Leu	Pro	Pro	Leu	Phe	Asn	Phe	Ser	Ala	Gly	Glu	Leu	Ser	Ile
			420					425					430		
Gln	Pro	Ser	Leu	Asn	Ala	Ile	Leu	Ile	Pro	Pro	His	Leu	Arg	Ser	Pro
		435					440					445			
Ala	Gly	Thr	Thr	Thr	Leu	Thr	Pro	Ser	Ser	Gln	Ala	Leu	Thr	Glu	Thr
	450					455					460				
Pro	Thr	Ser	Ser	Asp	Trp	Gln	Ser	Thr	Asp	Ala	Thr	Pro	Thr	Leu	Thr
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Asn	Ser	Ser													

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<211> 420

<212> PRT

<213> Mus musculus

<400> 15

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			20					25					30		
Asp	Gly	Ser	Lys	Val	Thr	Thr	Val	Val	Ala	Thr	Pro	Gly	Gln	Gly	Pro
		35					40					45			
Asp	Arg	Pro	Gln	Glu	Val	Ser	Tyr	Thr	Asp	Thr	Lys	Val	Ile	Gly	Asn
	50					55					60				
Gly	Ser	Phe	Gly	Val	Val	Tyr	Gln	Ala	Lys	Leu	Cys	Asp	Ser	Gly	Glu
65				70					75						80
Leu	Val	Ala	Ile	Lys	Lys	Val	Leu	Gln	Asp	Lys	Arg	Phe	Lys	Asn	Arg
			85					90						95	
Glu	Leu	Gln	Ile	Met	Arg	Lys	Leu	Asp	His	Cys	Asn	Ile	Val	Arg	Leu
			100					105					110		
Arg	Tyr	Phe	Phe	Tyr	Ser	Ser	Gly	Glu	Lys	Lys	Asp	Glu	Val	Tyr	Leu
		115					120					125			
Asn	Leu	Val	Leu	Asp	Tyr	Val	Pro	Glu	Thr	Val	Tyr	Arg	Val	Ala	Arg
	130					135					140				
His	Tyr	Ser	Arg	Ala	Lys	Gln	Thr	Leu	Pro	Val	Ile	Tyr	Val	Lys	Leu
145					150					155					160
Tyr	Met	Tyr	Gln	Leu	Phe	Arg	Ser	Leu	Ala	Tyr	Ile	His	Ser	Phe	Gly
			165					170						175	
Ile	Cys	His	Arg	Asp	Ile	Lys	Pro	Gln	Asn	Leu	Leu	Leu	Asp	Pro	Asp
			180					185					190		
Thr	Ala	Val	Leu	Lys	Leu	Cys	Asp	Phe	Gly	Ser	Ala	Lys	Gln	Leu	Val
		195					200					205			
Arg	Gly	Glu	Pro	Asn	Val	Ser	Tyr	Ile	Cys	Ser	Arg	Tyr	Tyr	Arg	Ala
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Pro	Glu	Leu	Ile	Phe	Gly	Ala	Thr	Asp	Tyr	Thr	Ser	Ser	Ile	Asp	Val
225					230				235						240
Trp	Ser	Ala	Gly	Cys	Val	Leu	Ala	Glu	Leu	Leu	Leu	Gly	Gln	Pro	Ile
			245					250						255	
Phe	Pro	Gly	Asp	Ser	Gly	Val	Asp	Gln	Leu	Val	Glu	Ile	Ile	Lys	Val
		260					265					270			
Leu	Gly	Thr	Pro	Thr	Arg	Glu	Gln	Ile	Arg	Glu	Met	Asn	Pro	Asn	Tyr

		275					280				285					
Thr	Glu	Phe	Lys	Phe	Pro	Gln	Ile	Lys	Ala	His	Pro	Trp	Thr	Lys	Val	
	290					295					300					
Phe	Arg	Pro	Arg	Thr	Pro	Pro	Glu	Ala	Ile	Ala	Leu	Cys	Ser	Arg	Leu	
305					310					315					320	
Leu	Glu	Tyr	Thr	Pro	Thr	Ala	Arg	Leu	Thr	Pro	Leu	Glu	Ala	Cys	Ala	
			325						330					335		
His	Ser	Phe	Phe	Asp	Glu	Leu	Arg	Asp	Pro	Asn	Val	Lys	Leu	Pro	Asn	
		340					345					350				
Gly	Arg	Asp	Thr	Pro	Ala	Leu	Phe	Asn	Phe	Thr	Thr	Gln	Glu	Leu	Ser	
	355					360						365				
Ser	Asn	Pro	Pro	Leu	Ala	Thr	Ile	Leu	Ile	Pro	Pro	His	Ala	Arg	Ile	
	370					375					380					
Gln	Ala	Ala	Ala	Ser	Pro	Pro	Ala	Asn	Ala	Thr	Ala	Ala	Ser	Asp	Thr	
385				390					395						400	
Asn	Ala	Gly	Asp	Arg	Gly	Gln	Thr	Asn	Asn	Ala	Ala	Ser	Ala	Ser	Ala	
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Ser	Asn	Ser	Thr													
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 <211> 447
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 <213> Mus musculus

<220>
 <221> VARIANT
 <222> 227, 308
 <223> Xaa = Any Amino Acid

<400> 16																
Met	Ala	Ser	Thr	Thr	Ala	Met	Asp	Val	Leu	Glu	Glu	Leu	Ser	Ser	Asp	
1				5					10					15		
Ser	Ser	Glu	Lys	Gln	Arg	Ser	Val	Asn	Ile	Leu	Asp	Ser	Phe	Val	Lys	
		20					25					30				
Asp	Met	Phe	Glu	Arg	Ile	Ala	Ser	Glu	Ala	Ser	Phe	Leu	Ala	Arg	Gln	
	35					40					45					
Ala	Arg	Asn	Ser	Thr	Ile	Asn	Ser	Arg	Glu	Ile	Gln	Thr	Ala	Ile	Arg	
50					55						60					
Leu	Leu	Leu	Pro	Gly	Glu	Leu	Cys	Arg	Arg	Gly	Thr	Gly	Cys	Gly	Lys	
65			70						75					80		
Ala	Ser	Val	Trp	Ala	Met	Gly	Gly	Gly	Val	Gly	Ala	Ser	Ser	Ser	Gly	
		85					90						95			
Val	Gly	Gly	Gly	Ser	Gly	Gly	Pro	Gly	Ser	Thr	Ser	Phe	Leu	Gln	Pro	
	100						105					110				
Gly	Val	Lys	Leu	Gly	His	Asp	Ser	Arg	Lys	Val	Thr	Thr	Val	Val	Ala	
	115					120					125					
Thr	Val	Gly	Gln	Asp	Pro	Glu	Arg	Ser	Gln	Glu	Val	Ala	Cys	Thr	Asp	
130					135					140						
Ile	Lys	Val	Ile	Gly	Asn	Gly	Ser	Phe	Gly	Val	Val	Tyr	Gln	Glu	Trp	
145			150						155					160		
Leu	Ala	Asp	Thr	Arg	Glu	Leu	Val	Ala	Ile	Lys	Lys	Val	Leu	Gln	Asp	
		165					170					175				
Lys	Arg	Phe	Lys	Tyr	Arg	Glu	Leu	Gln	Ile	Met	Cys	Lys	Leu	Asp	His	
	180						185					190				
Cys	Asn	Ile	Val	Arg	Leu	Gln	Tyr	Phe	Phe	Tyr	Ser	Ser	Gly	Glu	Lys	

		195					200					205			
Lys	Asp	Asp	Leu	Tyr	Leu	Asn	Leu	Val	Leu	Glu	Tyr	Val	Pro	Glu	Thr
	210					215					220				
Val	Tyr	Xaa	Val	Ala	Arg	His	Phe	Thr	Lys	Ala	Lys	Leu	Ile	Ile	Pro
225					230					235					240
Ile	Ile	Tyr	Val	Lys	Val	Tyr	Met	Tyr	Gln	Leu	Phe	Arg	Ser	Leu	Ala
				245					250					255	
Tyr	Ile	His	Ser	Gln	Gly	Val	Cys	His	Arg	Asp	Ile	Asn	Leu	Leu	Val
			260					265					270		
Asp	Pro	Asp	Thr	Ala	Ile	Leu	Lys	Leu	Cys	Asp	Phe	Gly	Ser	Ala	Lys
		275					280					285			
Gln	Leu	Val	Leu	Gly	Thr	Thr	Val	Ala	Pro	Glu	Leu	Tyr	Thr	Ser	Ser
	290					295					300				
Ile	Asp	Val	Xaa	Ser	Ala	Gly	Cys	Val	Leu	Ala	Glu	Leu	Leu	Leu	Ser
305					310					315					320
Gln	Pro	Ile	Phe	Pro	Gly	Asp	Asn	Gly	Val	Asp	Gln	Leu	Val	Glu	Ile
			325						330					335	
Ile	Lys	Val	Leu	Gly	Thr	Pro	Thr	Arg	Glu	Gln	Ile	Arg	Glu	Met	Asn
			340					345					350		
Pro	Lys	Tyr	Thr	Glu	Phe	Lys	Phe	Pro	Gln	Ile	Lys	Ala	His	Pro	Trp
		355					360					365			
Thr	Lys	Val	Phe	Lys	Ser	Arg	Thr	Ala	Pro	Arg	Pro	Leu	His	Ser	Ala
	370					375					380				
Leu	Ala	Cys	Trp	Ser	Thr	His	His	Thr	Gln	Gly	Ser	Pro	His	Leu	Arg
385					390					395					400
Leu	Val	Pro	Thr	Ala	Ser	Leu	Met	Asn	Cys	Gly	Val	Ser	Gly	Pro	Ala
			405						410					415	
Pro	Gln	Arg	Pro	Pro	Thr	Ser	Pro	Cys	Ser	Thr	Ser	Val	Leu	Val	Ile
			420					425					430		
Cys	Pro	Ser	Asn	His	Leu	Ser	Met	Pro	Phe	Ser	Ser	Leu	Leu	Thr	
		435					440					445			

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<210> 17
<211> 362
<212> PRT
<213> Caenorhabditis elegans
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<400> 17															
Met	Asn	Lys	Gln	Leu	Leu	Ser	Cys	Ser	Leu	Lys	Ser	Gly	Lys	Gln	Val
1				5					10					15	
Thr	Met	Val	Val	Ala	Ser	Val	Ala	Thr	Asp	Gly	Val	Asp	Gln	Gln	Val
			20					25					30		
Glu	Ile	Ser	Tyr	Tyr	Asp	Gln	Lys	Val	Ile	Gly	Asn	Gly	Ser	Phe	Gly
		35					40					45			
Val	Val	Phe	Leu	Ala	Lys	Leu	Ser	Thr	Thr	Asn	Glu	Met	Val	Ala	Ile
	50					55					60				
Lys	Lys	Val	Leu	Gln	Asp	Lys	Arg	Phe	Lys	Asn	Arg	Glu	Leu	Gln	Ile
65					70					75					80
Met	Arg	Lys	Leu	Asn	His	Pro	Asn	Ile	Val	Lys	Leu	Lys	Tyr	Phe	Phe
				85					90					95	
Tyr	Ser	Ser	Gly	Glu	Lys	Lys	Asp	Glu	Leu	Tyr	Leu	Asn	Leu	Ile	Leu
			100					105					110		
Glu	Tyr	Val	Pro	Glu	Thr	Val	Tyr	Arg	Val	Ala	Arg	His	Tyr	Ser	Lys
		115					120					125			
Gln	Arg	Gln	Gln	Ile	Pro	Met	Ile	Tyr	Val	Lys	Leu	Tyr	Met	Tyr	Gln
	130					135					140				

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Leu Leu Arg Ser Leu Ala Tyr Ile His Ser Ile Gly Ile Cys His Arg
145          150          155          160
Asp Ile Lys Pro Gln Asn Leu Leu Ile Asp Pro Glu Ser Gly Val Leu
          165          170          175
Lys Leu Cys Asp Phe Gly Ser Ala Lys Tyr Leu Val Arg Asn Glu Pro
          180          185          190
Asn Val Ser Tyr Ile Cys Ser Arg Tyr Tyr Arg Ala Pro Glu Leu Ile
          195          200          205
Phe Gly Ala Thr Asn Tyr Thr Asn Ser Ile Asp Val Trp Ser Ala Gly
          210          215          220
Thr Val Met Ala Glu Leu Leu Leu Gly Gln Pro Ile Phe Pro Gly Asp
225          230          235          240
Ser Gly Val Asp Gln Leu Val Glu Ile Ile Lys Val Leu Gly Thr Pro
          245          250          255
Thr Arg Glu Gln Ile Gln Ser Met Asn Pro Asn Tyr Lys Glu Phe Lys
          260          265          270
Phe Pro Gln Ile Lys Ala His Pro Trp Asn Lys Val Phe Arg Val His
          275          280          285
Thr Pro Ala Glu Ala Ile Asp Leu Ile Ser Lys Ile Ile Glu Tyr Thr
          290          295          300
Pro Thr Ser Arg Pro Thr Pro Gln Ala Ala Cys Gln His Ala Phe Phe
305          310          315          320
Asp Glu Leu Arg Asn Pro Asp Ala Arg Leu Pro Ser Gly Arg Pro Leu
          325          330          335
Pro Thr Leu Glu Met Asp Gly Pro Met Gly Thr Gly Glu Ile Ser Pro
          340          345          350
Thr Ser Gly Asp Val Ala Gly Pro Ser Ala
          355          360

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<210> 18
<211> 586
<212> DNA
<213> Caenorhabditis elegans

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<400> 18
gacaattatc gattaataaa agtttaaaca gacacgagaa attaaatata aaaaattgaa 60
ttgtttatatt gttgttttgt gtgtagaaaa ataattttga tagaaacaaa aaattagcgt 120
aaaataaata gctagcgcaa tactcgtgca cgagatgtgc gccagcagct ccttgacgca 180
aaacgtgacg tttagcacca aaatgatttt tgctctttga gttcttttgt ttcgggagca 240
aatttcacgc caatcccttt ctttttttca aattttcctg tttaaattcat gtaataacta 300
ttattcatgt caattacaac aaataagcat ccaagatttt atcataaact cgttcaaacc 360
tccttttacc actcgaaaag caatatctcc gacttccttc aaagagaaat gatgacaaaa 420
catagaaacc tcacgttata cgtttttgtca tcacgatttc agtgctcact tttctcattt 480
cattctcgct taatttcatt tttgtcactc tcgcgcatg ttttgcattt ttcgaaagca 540
tttatTTaaa actgaaaaaa taattcgtaa tttttcaaga atggct 586

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<210> 19
<211> 1584
<212> DNA
<213> Caenorhabditis elegans

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<400> 19
aaagaatggc tcaaaaagat gaccggattt tgctgttgaa tgctccaagg ctcccgtctg 60
aagatgataa gctcaacgag ctcaccgctg atcttcacga ttggggtcat gctaattgggc 120
ttgtcatgcg tctatcaacc gacaagtga gcagcgaagt ttgtcaaact actccattaa 180
cacttcttcc atctccattc ccgaaaaatg tttttgaaga agcagttcat attcagaacc 240

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ttttcgcaag tctttatcac ttcatagctt atgaatttga ttttctaate gatattcata 300
aaaatgtcgt gaaaactgat gatttcacac ggaatatggt tgagatcttg aagaaagtca 360
aagcccaagg actcaagcaa ccagtcactc tcgcgattca acgatctgat tatatgtgtc 420
ataaggatca atattcagcg gaatatggac tgaaacaaat tgaaataaac aatatcgcct 480
cgtcaatggg agcacatgct ctacggctca ccgaatggca tatcagagtt cttaaagcgt 540
tgaacatttc cgatgacgtc attcaaagag caattccaga aaacaagcca attccaatga 600
tcgctgaagc tttattcaag gcctgggtccc acttttcgaa cccagcagct gtgggttcttg 660
tcgttgtaga aaacgtcaat caaaatcaga ttgatcaacg ccacgtggaa tatgaacttg 720
aaaagttagg agtaccgatg acatgtatta ttagaagaaa tttaacacaa tgctatgaac 780
aattatcatt gaatgataga agcgatttga tgattgatgg gcgtcaagta gcaattgttt 840
acttcagagc aggatactca cctgatcatt atccatctac aaaagaatgg gaagcacgtg 900
agcgtatgga actttccacc gctatcaaaa ctccatggat cgggctacag gtggcaaata 960
ctaagaagac ccagcagggt ctttctgaag atggagtact cgaaagattc atcggaatac 1020
cacgagaagc tcgcgatatt cgagcttcat tcgcaggaat gtgggctttg gagaacactg 1080
atgaagtgaac tatgaaagtc gtggctggag ctcaaaaaca tccagaagcg tttgttctga 1140
agccacaaac tgaaggtgga gccgcattgc acaccggtga tgagatgggt caaatgctcc 1200
gagaacttcc ggaagaagag cgtggagctt tcattttgat ggagaaactg aaaccgatga 1260
ttattgaaaa ctacctgggt cttgcaaaga agccgatcac atttgctaag gctgttagtg 1320
aacttggagt gtatggttat gcatttggaa ggaaggatgc acctgagctt aagactgctg 1380
ggcatttgct ccgaacgaaa ccggaatcca cagctatggg tggagtagcc gccggacatg 1440
ctgttgctga caccctattc ctctacgaat ttatttgatt tcgaacataa tcagaaaact 1500
caacaaaaat gctgtgatat gaaaccattt gctattttaga tctttttgtg tttgtaaatt 1560
taatcattgt aatttattga atgt 1584

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<210> 20

<211> 490

<212> PRT

<213> *Caenorhabditis elegans*

<400> 20

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Met Ala Gln Lys Asp Asp Arg Ile Leu Leu Leu Asn Ala Pro Arg Leu
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Pro Leu Glu Asp Asp Lys Leu Asn Glu Leu Thr Ala Asp Leu His Asp
20          25          30
Trp Ala His Ala Asn Gly Leu Val Met Arg Leu Ser Thr Asp Lys Leu
35          40          45
Ser Ser Glu Val Cys Gln Thr Thr Pro Leu Thr Leu Leu Pro Ser Pro
50          55          60
Phe Pro Lys Asn Val Phe Glu Glu Ala Val His Ile Gln Asn Leu Phe
65          70          75          80
Ala Ser Leu Tyr His Phe Ile Ala Tyr Glu Phe Asp Phe Leu Ile Asp
85          90          95
Ile His Lys Asn Val Val Lys Thr Asp Asp Phe Thr Arg Asn Met Val
100         105         110
Glu Ile Leu Lys Lys Val Lys Ala Gln Gly Leu Lys Gln Pro Val Thr
115         120         125
Leu Ala Ile Gln Arg Ser Asp Tyr Met Cys His Lys Asp Gln Tyr Ser
130         135         140
Ala Glu Tyr Gly Leu Lys Gln Ile Glu Ile Asn Asn Ile Ala Ser Ser
145         150         155         160
Met Gly Ala His Ala Leu Arg Leu Thr Glu Trp His Ile Arg Val Leu
165         170         175
Lys Ala Leu Asn Ile Ser Asp Asp Val Ile Gln Arg Ala Ile Pro Glu
180         185         190
Asn Lys Pro Ile Pro Met Ile Ala Glu Ala Leu Phe Lys Ala Trp Ser
195         200         205
His Phe Ser Asn Pro Ala Ala Val Val Leu Val Val Val Glu Asn Val

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210	215	220
Asn Gln Asn Gln Ile Asp Gln Arg His Val Glu Tyr Glu Leu Glu Lys		
225	230	235
Leu Gly Val Pro Met Thr Cys Ile Ile Arg Arg Asn Leu Thr Gln Cys		240
	245	250
Tyr Glu Gln Leu Ser Leu Asn Asp Arg Ser Asp Leu Met Ile Asp Gly		255
	260	265
Arg Gln Val Ala Ile Val Tyr Phe Arg Ala Gly Tyr Ser Pro Asp His		270
	275	280
Tyr Pro Ser Thr Lys Glu Trp Glu Ala Arg Glu Arg Met Glu Leu Ser		285
	290	295
Thr Ala Ile Lys Thr Pro Trp Ile Gly Leu Gln Val Ala Asn Thr Lys		300
305	310	315
Lys Thr Gln Gln Val Leu Ser Glu Asp Gly Val Leu Glu Arg Phe Ile		320
	325	330
Gly Lys Pro Arg Glu Ala Arg Asp Ile Arg Ala Ser Phe Ala Gly Met		335
	340	345
Trp Ala Leu Glu Asn Thr Asp Glu Val Thr Met Lys Val Val Ala Gly		350
	355	360
Ala Gln Lys His Pro Glu Ala Phe Val Leu Lys Pro Gln Thr Glu Gly		365
	370	375
Gly Ala Ala Leu His Thr Gly Asp Glu Met Val Gln Met Leu Arg Glu		380
385	390	395
Leu Pro Glu Glu Glu Arg Gly Ala Phe Ile Leu Met Glu Lys Leu Lys		400
	405	410
Pro Met Ile Ile Glu Asn Tyr Leu Val Leu Ala Lys Lys Pro Ile Thr		415
	420	425
Phe Ala Lys Ala Val Ser Glu Leu Gly Val Tyr Gly Tyr Ala Phe Gly		430
	435	440
Arg Lys Asp Ala Pro Glu Leu Lys Thr Ala Gly His Leu Leu Arg Thr		445
	450	455
Lys Pro Glu Ser Thr Ala Met Gly Gly Val Ala Ala Gly His Ala Val		460
465	470	475
Val Asp Thr Pro Phe Leu Tyr Glu Phe Ile		480
	485	490

<210> 21

<211> 794

<212> DNA

<213> Caenorhabditis elegans

<400> 21

cattttgaaa	gtgccaagt	tgctggaacg	ctgaaaattg	aaattattaa	caaagaaatt	60
tgcttttaaaa	tccgaaaaat	caagaaaaaa	tcgataattt	cgctcgacaa	tccgcctgct	120
agcacggctt	gacgctcggt	tgccgcgcgc	tcattcgatt	tgtgtgagtg	cccagtgagg	180
cgcgtttgct	aaggctaact	gtgtagtcct	ctcggacaag	atctgtgaac	attgaaatga	240
aacacttggg	ttcaataaaa	tcacaagaaa	atgatgacaa	ttttgtttgc	gaccgaaaaa	300
aaattataaa	aattgaatat	tggttatcat	cgtttcaatc	tttgttttgt	attaaaggca	360
cagctgctaa	aaattgtttt	ttttttttca	attttgctaa	aagaaaatca	attttctgat	420
tttttgttga	gttcccgtgc	aaatcaatgt	cctagctttt	taaaattggt	ttttgttatg	480
taattcta	caaattttgt	cgaattttca	gagattttct	gctaaaacac	taaaaatagt	540
ctaaaagtcg	ataatttgat	aaacatttac	tcaaaccttt	tacggaaaaa	tgaaacaaaa	600
gttgcaaaaa	tatagtaatt	tcgcaatttt	ctgaacgcgt	acttaaagggt	acacggtttg	660
attcggattg	gtcccgccac	aaagtgttac	cataacattt	ttctcgctgc	gagacccatc	720
cgaataaatc	cgtgcgccta	atcagtgcga	gtacgcattt	catattactg	ataagtgcca	780
tttttagaac	aatg					794

<210> 22
 <211> 1017
 <212> DNA
 <213> *Caenorhabditis elegans*

<400> 22
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 cctgatgtca tagaagccgt cgagagtgat atgcccaggc ttgaaaaaaa ccagggttctc 120
 gttcgggaatt acgctgccgg tgtcaatcca gttgacacat atattcgtgc tggtcagtat 180
 ggaaaactac caaatcttcc atatgtacca ggaaaagatg gagccggatt cgtcgaactt 240
 gtggggagaaa gcgttaaaaa tgtgaaagtc ggcgatcgag tctggtatgg atcagaagcg 300
 gacagtacag cagagtatgt tgcggtgaat cgaccattcg agttgccgga aggagtttcg 360
 tttgaggaag gagcttctct cggagtgcct tatcttaccg cttatcgtgc attgtttcat 420
 cttgctggtg caaagactgg cgacgttata cttgtacacg gagcatctgg tggagtggga 480
 agtgcactga tgcagctggc tgcctggagg aacattgaag ctgttggcac tgctggatct 540
 gctgatggga tccggttcgt gaagagtctt ggtgcacgga atgtctataa tcattcggat 600
 aagcaatatg tgtcgaaaaat gaaaaatgat tatccaggag gcttcaacca cattttcgaa 660
 atggctgctc acacaaatct gaacacggac ctccgattgc tggctccacg tggtagagtt 720
 gcagtaattg gaaatcgcgc cgagaccacg atcaacgcaa gacaacttat gggtacagaa 780
 ggagctgttt acggtgtagc attgggaatg tcttccgagg ctgagctctt ggactttggc 840
 atcaacattg tctcattctt gaaggaaacc gagtttcgtc cacttataaa caaattgtat 900
 cgtctcgagc aattaggact ggctcatgag gaaattatga acaacaaggg agcgaaagga 960
 aatcttgtag tgcaaatcga acattaattc attattttta caccgcatth aaaggaa 1017

<210> 23
 <211> 328
 <212> PRT
 <213> *Caenorhabditis elegans*

<400> 23
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 20 25 30
 Arg Leu Glu Lys Asn Gln Val Leu Val Arg Asn Tyr Ala Ala Gly Val
 35 40 45
 Asn Pro Val Asp Thr Tyr Ile Arg Ala Gly Gln Tyr Gly Lys Leu Pro
 50 55 60
 Asn Leu Pro Tyr Val Pro Gly Lys Asp Gly Ala Gly Phe Val Glu Leu
 65 70 75 80
 Val Gly Glu Ser Val Lys Asn Val Lys Val Gly Asp Arg Val Trp Tyr
 85 90 95
 Gly Ser Glu Ala Asp Ser Thr Ala Glu Tyr Val Ala Val Asn Arg Pro
 100 105 110
 Phe Glu Leu Pro Glu Gly Val Ser Phe Glu Glu Gly Ala Ser Leu Gly
 115 120 125
 Val Pro Tyr Leu Thr Ala Tyr Arg Ala Leu Phe His Leu Ala Gly Ala
 130 135 140
 Lys Thr Gly Asp Val Ile Leu Val His Gly Ala Ser Gly Gly Val Gly
 145 150 155 160
 Ser Ala Leu Met Gln Leu Ala Ala Trp Arg Asn Ile Glu Ala Val Gly
 165 170 175
 Thr Ala Gly Ser Ala Asp Gly Ile Arg Phe Val Lys Ser Leu Gly Ala
 180 185 190
 Arg Asn Val Tyr Asn His Ser Asp Lys Gln Tyr Val Ser Lys Met Lys
 195 200 205

Asn	Asp	Tyr	Pro	Gly	Gly	Phe	Asn	His	Ile	Phe	Glu	Met	Ala	Ala	His
210						215					220				
Thr	Asn	Leu	Asn	Thr	Asp	Leu	Gly	Leu	Leu	Ala	Pro	Arg	Gly	Arg	Val
225					230					235					240
Ala	Val	Ile	Gly	Asn	Arg	Ala	Glu	Thr	Thr	Ile	Asn	Ala	Arg	Gln	Leu
				245					250					255	
Met	Val	Thr	Glu	Gly	Ala	Val	Tyr	Gly	Val	Ala	Leu	Gly	Met	Ser	Ser
			260					265					270		
Glu	Ala	Glu	Leu	Leu	Asp	Phe	Gly	Ile	Asn	Ile	Val	Ser	Phe	Leu	Lys
		275					280				285				
Glu	Thr	Glu	Phe	Arg	Pro	Leu	Ile	Asn	Lys	Leu	Tyr	Arg	Leu	Glu	Gln
	290					295					300				
Leu	Gly	Leu	Ala	His	Glu	Glu	Ile	Met	Asn	Asn	Lys	Gly	Ala	Lys	Gly
305					310					315					320
Asn	Leu	Val	Val	Gln	Ile	Glu	His								
				325											

<210> 24

<211> 1234

<212> DNA

<213> Caenorhabditis elegans

<400> 24

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taaccatgga cattccagaa gtctatagta cacgcgatcc taccgtaccc ttcagtattt 180
ctatcagatt gatagctttc ggtagtcagg tacagcctaa aaaattcctg cttgcctttt 240
tgcctacatg tctgcctacc ttcagtcata atgcctacat aatgattttt tccaattgaa 300
acttgcagac agaaattcaa atggcaaaaa gaaacaaaca ccgaaacatt aatcacattt 360
cttttcatat cagttttcct gtcaaagcac atttctggag tctgtgtgta tttttttgtg 420
tctttatgtg atcgggtgtg tgaaatttgt agttgatgtt gataacatac ttttttttga 480
aacaaaaagt gattgattag gcttgaattc agagatatgt tctgtgatac ttgcgattct 540
cgagccaaaa acacggtatc cggctctgac acgacaactt tttcgcaaaa tacaagctga 600
tgtgcgcctt gaaagagtac tgtaatttca acctttcgtt gttgcggaat tttcatagtt 660
tctcgttcaa aatatatgta tttattaaac aaaaaactaa aacaaaacaa ttgagaacac 720
ataaattgtg aaaaatcaat gagaccacag caaaaaattt tgtatctaca gtactcttta 780
aaggcgcaca tccgttctta ttttcagcaa aaatgtcgtt tcgagaccgg gtaccgtatt 840
tttttttgtg caaaacttta ggtctaggta atattaaaaa aaaattccac aaaactagaa 900
tctagagctt tccattaaat tttttgatga catttgaaaa ttcattgatga tttttttcca 960
acaatttcga aatatccctc ttttcacctg gtccactgaa ttctctttcc gaaagaccac 1020
cacaatttca gggctccgcc catttcgttg tttgtagcct tcccagacct acgttttttga 1080
tgacaattgt gagagaagtg agaggttcag acacaaaaag cgacgtggtc gaatgagtat 1140
aaatagagag tgaagtttcc aatttcctc acaattgttt gtttgcaatc cactttccaa 1200
aaaaacacaa cttcaatcaa aaatcattat gggtt                                     1234

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<210> 25

<211> 664

<212> DNA

<213> Caenorhabditis elegans

<400> 25

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attttcgcct atgccggaca acaatacgag gataatagag tcactcagga acaatggcca 120
gcattgaaag aaacctgcgc tgctccattc ggacaacttc cattcctcga agtcgacggc 180
aagaagcttg ctcaatccca cgcgattgct cgtttcttgg ctctgtgagt caagctcaac 240
ggaaaaaccg cctgggaaga ggctcaagtg aactctcttg ccgatcaata caaggattat 300

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tcaagtgagg ctcgtccata tttctacgct gtcatgggat tcggtccagg agacgttgaa 360
actttgaaga aagacatctt ccttccagca tttgaaaagt tctacggatt cttgggtcaac 420
ttcttgaagg cttcgggata cggattcctt gtcggagact ctttgacctg gattgacttg 480
gctattgccc aacattcagc tgatttgatt gccaaaggag gtgatttcag caagttccca 540
gagctcaagg ctcatgccga gaagatccag gcgattccac aaatcaagaa atggatcgag 600
acccgtccag tcacaccatt ctaaatagct gtataaaatc tgcaaataaa tatttttttt 660
tttt

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<210> 26

<211> 207

<212> PRT

<213> *Caenorhabditis elegans*

<400> 26

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Met Val Ser Tyr Lys Leu Thr Tyr Phe Asn Gly Arg Gly Ala Gly Glu
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Val Ser Arg Gln Ile Phe Ala Tyr Ala Gly Gln Gln Tyr Glu Asp Asn
          20           25           30
Arg Val Thr Gln Glu Gln Trp Pro Ala Leu Lys Glu Thr Cys Ala Ala
          35           40           45
Pro Phe Gly Gln Leu Pro Phe Leu Glu Val Asp Gly Lys Lys Leu Ala
          50           55           60
Gln Ser His Ala Ile Ala Arg Phe Leu Ala Arg Glu Phe Lys Leu Asn
65           70           75           80
Gly Lys Thr Ala Trp Glu Glu Ala Gln Val Asn Ser Leu Ala Asp Gln
          85           90           95
Tyr Lys Asp Tyr Ser Ser Glu Ala Arg Pro Tyr Phe Tyr Ala Val Met
          100          105          110
Gly Phe Gly Pro Gly Asp Val Glu Thr Leu Lys Lys Asp Ile Phe Leu
          115          120          125
Pro Ala Phe Glu Lys Phe Tyr Gly Phe Leu Val Asn Phe Leu Lys Ala
          130          135          140
Ser Gly Ser Gly Phe Leu Val Gly Asp Ser Leu Thr Trp Ile Asp Leu
145          150          155          160
Ala Ile Ala Gln His Ser Ala Asp Leu Ile Ala Lys Gly Gly Asp Phe
          165          170          175
Ser Lys Phe Pro Glu Leu Lys Ala His Ala Glu Lys Ile Gln Ala Ile
          180          185          190
Pro Gln Ile Lys Lys Trp Ile Glu Thr Arg Pro Val Thr Pro Phe
          195          200          205

```

<210> 27

<211> 404

<212> DNA

<213> *Caenorhabditis elegans*

<400> 27

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tctcattctc ttcaagacat aacacaacgg gctgacgacc atatcatcaa cgacgatttt 60
ttaggaactg tactttatct gtgtctgacc aacacgtgtg aatgaagttt caactggaaa 120
atgtgtttga aacactgcaa agaatttcga attttgatga taatttttaa tgccattatc 180
agtttttaata cgccactcta gtctttgatt ctttgcacac acacacacac acacacacac 240
acacacacac tcacaaacac gcctgaaatt tcgcaatatg ctgatttaac gagaaaacat 300
ttgatgacaa taaacttggc gtattaatat aaaagggaaa attcaattca gattctcaac 360
ggtttatttt ctgtcacaac tcttcctaatt attcaccatg gttt

```

<210> 28

<211> 630
 <212> DNA
 <213> *Caenorhabditis elegans*

<400> 28
 atgggtttcct acaagcttac ctacttcgat ggacgcggag cggagagct ctgccgtcaa 60
 atcttttgctg ccgccgagca gaaatatgaa gataacagac ttaccgatga ggagtgggag 120
 aagttcaaag cggccggaaa aaccccatat aaccagcttc caatgctcga ggtagatggc 180
 aaaccactcg ctcagtccca cgcgatggct cgttatcttg ctcgggaatt cgggttcaac 240
 ggaaagagca gatgggaaga agctcaagtc aactccttgg ccgaccagta caaagactat 300
 tacgcggagg ctcgtccata cctcgtctgtg aagcttggtt acacagaagg agacgcggag 360
 gctctttaca caagcgtcta tcttccagtt ttcaagaaac actatggatt ctttgtcaat 420
 gctttgaagg ccagcggggtc aggattcttg gttggaaatt ccttgacttt tattgatttg 480
 cttgttgctc agcattcagc tgatttgctg ggacgtgaaa agtcggatct tttcaatgat 540
 gtcccagaga tgaaggcaca ttccgaaaaa gttcagtcaa ttcctcagat caagaaatgg 600
 attgagactc gtccagcgag tgactggtaa 630

<210> 29
 <211> 209
 <212> PRT
 <213> *Caenorhabditis elegans*

<400> 29
 Met Val Ser Tyr Lys Leu Thr Tyr Phe Asp Gly Arg Gly Ala Gly Glu
 1 5 10 15
 Leu Cys Arg Gln Ile Phe Ala Ala Ala Glu Gln Lys Tyr Glu Asp Asn
 20 25 30
 Arg Leu Thr Asp Glu Glu Trp Glu Lys Phe Lys Ala Ala Gly Lys Thr
 35 40 45
 Pro Tyr Asn Gln Leu Pro Met Leu Glu Val Asp Gly Lys Pro Leu Ala
 50 55 60
 Gln Ser His Ala Met Ala Arg Tyr Leu Ala Arg Glu Phe Gly Phe Asn
 65 70 75 80
 Gly Lys Ser Arg Trp Glu Glu Ala Gln Val Asn Ser Leu Ala Asp Gln
 85 90 95
 Tyr Lys Asp Tyr Tyr Ala Glu Ala Arg Pro Tyr Leu Ala Val Lys Leu
 100 105 110
 Gly Tyr Thr Glu Gly Asp Ala Glu Ala Leu Tyr Thr Ser Val Tyr Leu
 115 120 125
 Pro Val Phe Lys Lys His Tyr Gly Phe Phe Val Asn Ala Leu Lys Ala
 130 135 140
 Ser Gly Ser Gly Phe Leu Val Gly Asn Ser Leu Thr Phe Ile Asp Leu
 145 150 155 160
 Leu Val Ala Gln His Ser Ala Asp Leu Leu Gly Arg Glu Lys Ser Asp
 165 170 175
 Leu Phe Asn Asp Val Pro Glu Met Lys Ala His Ser Glu Lys Val Gln
 180 185 190
 Ser Ile Pro Gln Ile Lys Lys Trp Ile Glu Thr Arg Pro Ala Ser Asp
 195 200 205
 Trp

<210> 30
 <211> 1137
 <212> DNA
 <213> *Caenorhabditis elegans*

<400> 30

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aattgaaatg agtttgcaat tttgtattat tttttaattc atatttcaag aagcaatttt 60
ttgctaattt gttttaatgg aaatcgatgt ttctaaaata tcttgaatga attgttcttt 120
taaaaatttt atggtaaagt tttcagcagg atgtttctat agaagctttt tgcattgcaa 180
gagtgttgaa atatacagga tatttacaaa agcctgggaa gtaggcatgc ttttaggtac 240
aaatcagacc tacaccgcct tcctttgtgg tttaccatca tagctaaaac tttccgaaca 300
ttccctgggtg agacacaatg ttcaaagcac aaaaccaatc acgtcataat gttaatttga 360
cttttattgt caaaaattac aaaagcgtcg ttttctggaa catgaacata ataagaattt 420
tcaaatttcg gtgggcacaa taaatatgta atcttttatt tatttttgga ggatagtctt 480
ttcaaaggca ggtgtataac cctcaaaaaga aagcacgttt gtgtttcaaa gtgagactta 540
aattatttca aagacaaatt ccataggaaa tcattgttca tcaggcacct tcccagaaat 600
taggctgtag gcaggcacgt aggctgcggt aaatgcctac gcctcttttg cgcgagatta 660
tgaaattgtg ttgtactgtc ggaaaaattt cagaaacaaa aaaaaatatt ttttgtgact 720
ttttgtgtca gttatagtag tttcttatca tggatatctt aataataatg gcaagcgtaa 780
caagatgatt gatgccatgg gtttatattt gtgagtagtc acaaattgtg acacaacatt 840
cccttcgaaa gatctggaaa agtcacaaaa ccttgcatat atttttttca accaatatta 900
ttttgacctt ctctgttcat cgtaacattg caacaacaaa aaacgatgac tacactttat 960
gatttctagt caacaacgtg cgcgcaatgt gtagagcaaa tgatgacaaa ctacagaata 1020
tggtgagtgg agagacgaca gacatttgag aaatgggtat aaatagagac ggccggcatt 1080
cagtgttcaa cccttctcat cgaccactcg atttcttgct tggttatttc aacaatg 1137

```

<210> 31

<211> 665

<212> DNA

<213> *Caenorhabditis elegans*

<400> 31

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cccaattcgt ggagctggag agattgctcg tcagatcttg gcctacgctg gacaagactt 120
cgaggacaac agaatcccaa aggaggaatg gccagctgtc aagccaagca ctccattcgg 180
acagcttcca ctcttgaag ttgacggaaa ggttcttgcc caatctcatg ctatcgcccg 240
ttacttggtc cgtcagttcg gaatcaatgg aaagtgtgca tgggaggagg ctcaagtcaa 300
ctcggttgct gatcaattca aggattacct caacgaagtt cgtccatact tcatggtgaa 360
gatgggattt gctgaaggag atctcgatgc tcttgccaag gacgtcttcc ttccaggatt 420
caagaagcac tatggattct ttgctaactt cctcaagtcg gctggatccg gatacttggt 480
tgagactctt ttgacctttg tcgacttgct cgtcgctcag cacactgctg atcttctggc 540
tgccaacgca gctcttctcg atgaattccc acaattcaag gctcatcagg aaaagggttca 600
ctcgaatgcc aacatcaaga agtggttgga gactcgtcca gttactccat tctaaatgat 660
ttcca 665

```

<210> 32

<211> 206

<212> PRT

<213> *Caenorhabditis elegans*

<400> 32

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Met Val His Tyr Lys Val Ser Tyr Phe Pro Ile Arg Gly Ala Gly Glu
 1             5             10            15
Ile Ala Arg Gln Ile Leu Ala Tyr Ala Gly Gln Asp Phe Glu Asp Asn
          20          25          30
Arg Ile Pro Lys Glu Glu Trp Pro Ala Val Lys Pro Ser Thr Pro Phe
          35          40          45
Gly Gln Leu Pro Leu Leu Glu Val Asp Gly Lys Val Leu Ala Gln Ser
          50          55          60
His Ala Ile Ala Arg Tyr Leu Ala Arg Gln Phe Gly Ile Asn Gly Lys
65             70             75            80

```

Cys	Ala	Trp	Glu	Glu	Ala	Gln	Val	Asn	Ser	Val	Ala	Asp	Gln	Phe	Lys
			85					90					95		
Asp	Tyr	Leu	Asn	Glu	Val	Arg	Pro	Tyr	Phe	Met	Val	Lys	Met	Gly	Phe
		100					105					110			
Ala	Glu	Gly	Asp	Leu	Asp	Ala	Leu	Ala	Lys	Asp	Val	Phe	Leu	Pro	Gly
		115					120					125			
Phe	Lys	Lys	His	Tyr	Gly	Phe	Phe	Ala	Asn	Phe	Leu	Lys	Ser	Ala	Gly
	130					135					140				
Ser	Gly	Tyr	Leu	Val	Gly	Asp	Ser	Leu	Thr	Phe	Val	Asp	Leu	Leu	Val
145					150					155					160
Ala	Gln	His	Thr	Ala	Asp	Leu	Leu	Ala	Ala	Asn	Ala	Ala	Leu	Leu	Asp
			165					170					175		
Glu	Phe	Pro	Gln	Phe	Lys	Ala	His	Gln	Glu	Lys	Val	His	Ser	Asn	Ala
		180						185					190		
Asn	Ile	Lys	Lys	Trp	Leu	Glu	Thr	Arg	Pro	Val	Thr	Pro	Phe		
		195					200					205			

<210> 33
 <211> 420
 <212> DNA
 <213> *Caenorhabditis elegans*

<400> 33
 attatccaaa aagattagaa gttggcaaac cttgggcaag aatttccaga gattgcacta 60
 aagttgtagc caagtttgat ccaactttat ccaatctttt actaaaatta tccttaagac 120
 tatttaaatt ttagatagag aattggcgag agttagatcc cacttgata tgacttatag 180
 ttagcctaac ctgaagctat tgcttgcttg atcatttggt ttatcgcttt gctacttgga 240
 taaccagctc caatagttgt tatttttgct tttgtcatca tttttccacg atttacactc 300
 tcaagtgaag ccaactgttc tttgatgcca gacgatgaca ttacacttga taagaaaata 360
 tatataaact ggaattaaaa acaattgata catcgattca attactgaat tctaattatg 420

<210> 34
 <211> 716
 <212> DNA
 <213> *Caenorhabditis elegans*

<400> 34
 atgccaaact ataagctatt gtattttgat gctcgtgctc ttgctgagcc aatccgtatc 60
 atgtttgcaa tgctcaatgt gccttacgag gattatagag tttcagtgga agaattggtca 120
 aagctgaagc caacgactcc atttggccag cttcccattt tacaagtcga tggagaacaa 180
 ttcggtcagt caatgtctat cacaagatac ttggcaagaa aatttggact cgctggaaaa 240
 actgcagagg aagaagctta cgctgattca attgtagatc aatacagaga tttcatattc 300
 tttttccgctc aattcacttc ttccgttttc tatggaagtg acgctgatca tattaacaaa 360
 gtacgttttg aagttgttga accagcccgt gatgatttct tggcaataat caataagttc 420
 ctggccaaga gtaaatcagg attcctcgtt ggagactcat tgacttgggc tgatattgtg 480
 attgctgaca atttgacaag tctcctgaag aatggattct tagatttcaa caaagaaaag 540
 aagttggaag agttctataa caagattcat tcaattccag aaattaagaa ttacgtggca 600
 acaagaaagg atagtattgt ttaaaatcga attatttaag tctgaattat gtatgtagta 660
 aaataatatc gttcctatca cgtctcccag agagcgtaat aaattattat tatgtg 716

<210> 35
 <211> 207
 <212> PRT
 <213> *Caenorhabditis elegans*

<400> 35

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Met Pro Asn Tyr Lys Leu Leu Tyr Phe Asp Ala Arg Ala Leu Ala Glu
 1           5           10           15
Pro Ile Arg Ile Met Phe Ala Met Leu Asn Val Pro Tyr Glu Asp Tyr
          20           25           30
Arg Val Ser Val Glu Glu Trp Ser Lys Leu Lys Pro Thr Thr Pro Phe
          35           40           45
Gly Gln Leu Pro Ile Leu Gln Val Asp Gly Glu Gln Phe Gly Gln Ser
 50           55           60
Met Ser Ile Thr Arg Tyr Leu Ala Arg Lys Phe Gly Leu Ala Gly Lys
65           70           75           80
Thr Ala Glu Glu Glu Ala Tyr Ala Asp Ser Ile Val Asp Gln Tyr Arg
          85           90           95
Asp Phe Ile Phe Phe Phe Arg Gln Phe Thr Ser Ser Val Phe Tyr Gly
          100          105          110
Ser Asp Ala Asp His Ile Asn Lys Val Arg Phe Glu Val Val Glu Pro
          115          120          125
Ala Arg Asp Asp Phe Leu Ala Ile Ile Asn Lys Phe Leu Ala Lys Ser
          130          135          140
Lys Ser Gly Phe Leu Val Gly Asp Ser Leu Thr Trp Ala Asp Ile Val
145          150          155          160
Ile Ala Asp Asn Leu Thr Ser Leu Leu Lys Asn Gly Phe Leu Asp Phe
          165          170          175
Asn Lys Glu Lys Lys Leu Glu Glu Phe Tyr Asn Lys Ile His Ser Ile
          180          185          190
Pro Glu Ile Lys Asn Tyr Val Ala Thr Arg Lys Asp Ser Ile Val
          195          200          205

```

<210> 36

<211> 603

<212> DNA

<213> *Caenorhabditis elegans*

<400> 36

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attccgcaac cccgtcaaatt ttaagaagag aaagaaaaaa aacacaacgt gtttgcacct 60
gtaaggtagt ttttttttgt tgccttcggc gttttgattc acatgaaagt ttctacggaa 120
aaactttcat tgcataacga tcttcatatc ttgtttctgg aaacgaaaat ttccaacatg 180
aaagaaaccc gacgctattt attctcgcaa cacaaaaatt tcacatttaa ataaccgcgg 240
tttttctcga acagcatatt tgacgcgcat tgctcgtcaa gtttgatgcg tgcacactat 300
tttgctgttg tttttttctt ttttctctaa attttcttta cgctttcgta gtttctatag 360
aaacgattct ccactcccgg ttttcttccg attctcaaaa ttaattaaaa tttagttatt 420
aaaaatcctt tttcttgaaa taatcggttca atttcgagtt ttcaagagtg gagacgttga 480
at ttgtgagc cgcttat tttt ttctgtgttt ttgttttgtg gtttttaatc agtgtcataa 540
tcatactttc cattgtttct ttattattca aagttgtaga ttcagtattt tagatcggtg 600
atg 603

```

<210> 37

<211> 718

<212> DNA

<213> *Caenorhabditis elegans*

<400> 37

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tttagatcgg tgatgtttat gaatcttctc actcaggtct ccaacgcgat ttttccgcag 60
gtcgaagccg ctcaaaaaat gtcgaaccgt gctgtcgctg ttcttcgtgg agaaactgtt 120
accggtacta tctggatcac acagaagtcc gaaaatgacc aggcagttat tgaaggagaa 180
atcaagggac ttactcccgg tcttcatgga ttccacgttc accaatatgg tgattccacc 240

```

```

aacggatgca tttctgccgg tccacacttc aatccatttg gaaagactca tgggtggacca 300
aaatccgaga tccgtcacgt aggcgatcta ggaaatgtgg aagctggagc cgatggagtg 360
gcaaaaatca agctcaccca cacgctcgtc acgctttacg gtccaaacac tgtcgttggc 420
cgatctatgg ttgttcatgc cggacaagac gacctcggcg agggagtcgg agacaaggca 480
gaagagtcca agaagactgg aaacgccgga gctcgtgctg cctgcggtgt cattgctctc 540
gctgctcccc agtgactacc tgaatcgcgt ctctgaatct ccacacaatt cctactaaag 600
acaatttttc atttcttgct ttgtcgttat attcttaaga atcccgttgt tectactcct 660
actactgtat attttcacat aaaattttctt caaaatttca aataaagggt gtagtttc 718

```

<210> 38

<211> 180

<212> PRT

<213> *Caenorhabditis elegans*

<400> 38

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Met Phe Met Asn Leu Leu Thr Gln Val Ser Asn Ala Ile Phe Pro Gln
 1           5           10           15
Val Glu Ala Ala Gln Lys Met Ser Asn Arg Ala Val Ala Val Leu Arg
          20           25           30
Gly Glu Thr Val Thr Gly Thr Ile Trp Ile Thr Gln Lys Ser Glu Asn
          35           40           45
Asp Gln Ala Val Ile Glu Gly Glu Ile Lys Gly Leu Thr Pro Gly Leu
          50           55           60
His Gly Phe His Val His Gln Tyr Gly Asp Ser Thr Asn Gly Cys Ile
65          70          75          80
Ser Ala Gly Pro His Phe Asn Pro Phe Gly Lys Thr His Gly Gly Pro
          85          90          95
Lys Ser Glu Ile Arg His Val Gly Asp Leu Gly Asn Val Glu Ala Gly
          100         105         110
Ala Asp Gly Val Ala Lys Ile Lys Leu Thr Asp Thr Leu Val Thr Leu
          115         120         125
Tyr Gly Pro Asn Thr Val Val Gly Arg Ser Met Val Val His Ala Gly
          130         135         140
Gln Asp Asp Leu Gly Glu Gly Val Gly Asp Lys Ala Glu Glu Ser Lys
          145         150         155         160
Lys Thr Gly Asn Ala Gly Ala Arg Ala Ala Cys Gly Val Ile Ala Leu
          165         170         175
Ala Ala Pro Gln
          180

```

<210> 39

<211> 1577

<212> DNA

<213> *Caenorhabditis elegans*

<400> 39

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tgaataaaaa cgttgaaccc aacggacatc aaagtatcaa agtaagtaag taagtaagta 60
acctgaataa aaacgttgca tataaaaaat ctactcgaaa attaagttag aattgaagga 120
ttgctttccg aagagaaaat gacaattata gggataacta aaacatcaaa aatgtatatt 180
agactaccat aaatataaaa catcagtgtg gctctccaag ctattctgac ggattgacgac 240
aacgagctcg ctggagttgg catcagtgtg gaaggcagac acataagaag actcgaattt 300
gcggatgacg tagtcctgac atgttccaca ccgggagaag ttcaagaacg actggaaatt 360
ttggaccgaa taagttctaa ttacggactc aagatcaatc agtcaaagac tgttcttctg 420
aagaacaagt tttgccggag ccaagacgtc cttttcaacg gatcccccac cattcccgtg 480
cctggttgcc gctatctggg tcgctggatc gacatttctg gctcaattga cgaagagatc 540
tcgaggagaa taagagcagg ttgggggtgct ctgggttgga tcaaagaagt cttgagaatc 600

```

```

atgccaaaca aggaaagaat catcctcttc aagcaaaatg tgctaccagc tctcctgtat 660
gctagtgaag cttggacttg taatgctgga tccacgttga gactcaaaag aactgtcacc 720
ggtctcatcg acgctgcaga aattcgaggc tggaacttca acttggaacg ttacctcctt 780
gcaaaacaat caagatttgc aggacacatt ctacggagag atccaaaccg atggacaaaa 840
atctgcacgg aatgggaccc gagccacaac aaaaattgga aacgtgccgt tggaggacag 900
aagaagagat gggctaagga catcgacgaa gaatacggaa aattccacca caattccgcc 960
atgtcggggac aagtcgttgt tgggagaaga agactaggaa tgctcactcc gaaggctcca 1020
tggctgtcca tcgcacgaac cgaccgtgaa aaatggaaag agtttgtccg cagttgcctc 1080
gcaacttgaa cccaacggac atcaaagtat caaagtaagt aagtaagtaa gtaacctgaa 1140
taaaaacggt gcaattaaaa aatctactcg aaaattaagt gagaattgaa ggattgcttt 1200
ccgaagagaa aatgacaatt ataggggtata ctaaaacatc aaaaatgtat attagactac 1260
cataaatatt acgataattt aaaaattact agaaacacgc aattcggctc aaaaagcaac 1320
aatttagact gaaaacgagc taaaagaata ttattcaaaa accactttgc tcggtaaata 1380
tgggtgtatca tggtccgcaa acactgtctt ttgttttgcg tactttgttt acgcgcattc 1440
gaatttcagt gttcgcgctt tttgtttact tttttatatt tcatccaaaa atcgtatttt 1500
cagcttgata tgtttctgcg aattgtaaaa atttatatatt gactattgaa tattttaatt 1560
atgtgcagcc gaaaatg

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<210> 40

<211> 813

<212> DNA

<213> *Caenorhabditis elegans*

<400> 40

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cacaggagtc gctgctgttc gctcgaagca ctgctgcca gatttaccat acgactatgc 120
tgatttggag cctgtaatca gtcacgagat tatgcaactt catcatcaaa agcatcatgc 180
cacttatgtg aacaatctca accaaattga ggaaaagctt cagcaggcgg tctccaaagg 240
aaacgtcaaa gaagctatcg ctcttcagcc agctctcaag ttcaatggag gaggacatat 300
caaccactcc atcttctgga ctaatttggc aaaggacgga ggagaaccat cggcggagtt 360
gctcaccgca attaagagcg acttcggatc tctggataat cttcaaaaac agctttcggc 420
atcaactgtc gctgttcaag gatcaggatg gggatggttg ggatactgtc caaagggaaa 480
gatcttgaag gttgccacat gtgccaatca ggatccactt gaggcaacaa ctggacttgt 540
tccactgttc ggaattgacg tctgggagca cgcttactac ttgcagtaca agaattgttcg 600
accagattat gtcaatgcta tttggaagat cgccaactgg aagaacgtca gcgagcgttt 660
tgcaaaggca cagcaataaa tgagctgaat cacaagaatt aatcgtcaaa tgtagcagta 720
gaagttgact cccattgttt tgtaactatt tttgtttctt aattatttcg aaatgtaaat 780
tttcaaacct tttcaaatga aaagttttca ccg

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<210> 41

<211> 221

<212> PRT

<213> *Caenorhabditis elegans*

<400> 41

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Met Leu Gln Asn Thr Val Arg Cys Val Ser Lys Leu Val Gln Pro Ile
1          5          10          15
Thr Gly Val Ala Ala Val Arg Ser Lys His Ser Leu Pro Asp Leu Pro
20          25          30
Tyr Asp Tyr Ala Asp Leu Glu Pro Val Ile Ser His Glu Ile Met Gln
35          40          45
Leu His His Gln Lys His His Ala Thr Tyr Val Asn Asn Leu Asn Gln
50          55          60
Ile Glu Glu Lys Leu His Glu Ala Val Ser Lys Gly Asn Val Lys Glu
65          70          75          80
Ala Ile Ala Leu Gln Pro Ala Leu Lys Phe Asn Gly Gly Gly His Ile
85          90          95

```

Asn	His	Ser	Ile	Phe	Trp	Thr	Asn	Leu	Ala	Lys	Asp	Gly	Gly	Glu	Pro
			100					105					110		
Ser	Ala	Glu	Leu	Leu	Thr	Ala	Ile	Lys	Ser	Asp	Phe	Gly	Ser	Leu	Asp
		115					120				125				
Asn	Leu	Gln	Lys	Gln	Leu	Ser	Ala	Ser	Thr	Val	Ala	Val	Gln	Gly	Ser
		130				135					140				
Gly	Trp	Gly	Trp	Leu	Gly	Tyr	Cys	Pro	Lys	Gly	Lys	Ile	Leu	Lys	Val
145				150					155					160	
Ala	Thr	Cys	Ala	Asn	Gln	Asp	Pro	Leu	Glu	Ala	Thr	Thr	Gly	Leu	Val
			165					170					175		
Pro	Leu	Phe	Gly	Ile	Asp	Val	Trp	Glu	His	Ala	Tyr	Tyr	Leu	Gln	Tyr
		180					185						190		
Lys	Asn	Val	Arg	Pro	Asp	Tyr	Val	Asn	Ala	Ile	Trp	Lys	Ile	Ala	Asn
	195						200				205				
Trp	Lys	Asn	Val	Ser	Glu	Arg	Phe	Ala	Lys	Ala	Gln	Gln			
	210					215					220				

<210> 42

<211> 1162

<212> DNA

<213> *Caenorhabditis elegans*

<400> 42

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aaaaaaaaat cgataaaaaa tccgcgtcaa cgaaagttaa aagttacagt atttgtcggt 60
tcgagaccgg gtaccgtagt ttttggtgaa aacattgcaa aatttggtca acaatttcat 120
cgctgcgaga ccgacacaac actttatattt atttttgggt ttcccttata gcttatcata 180
aacatgtgac gtcatcatct cttgtacaga gcaccgcgac tgggagtata agaatcgccg 240
gaaaacatca ataatcagtt cggtagaagt gaaaattgag cgtaaaatat gatcattttt 300
cgatgcacca tatgtgacgc gcaatacttc tacaagccgc tgtgtactgc tcgtggacaa 360
ctttggatta ttttttggtt ttaaaattca aaatagtcaa tatattgctt atttatagcg 420
cgcttttttg acagtaagtt tgtcaaattt gcgcgtaagt tatggtggtt gcacatatgc 480
accatacagc aacaccccgc ggcccggcta gtggtacatc catgcaaagt cgctctactg 540
ataatttgag ttttaaccagg tttaggcgca agataagaaa aaagcttttg accaaaaaat 600
ttagagttta tttttttcgg acatttttta tatacatcac aaaaatattg ggccactcgt 660
ttttgataaa aacgacaagc ccaaaagtgc aggtatacgg tagacaaatt gcgtacaggt 720
accacttttc cacgtagtgc caggttgtcc cattacgctt tgatctatga aaaatgcggg 780
aatttttcgt ccagaaaaat gtgacgtcag cacgttctca accatgcgaa atcagttgaa 840
aactctgcgt ctattctccc gcattttttg tagatctgta gattttaga tcaatccatt 900
ccccgtatac cctgacccat aatcaatacc tacctaattt ttgtctttcc ccctactttt 960
ttgcctgtcc aaaataagcg agactatgcc gtagtctggg gtccaacaac atgttcctta 1020
tcagtgataa cgctacaatc ttctttcttt tttctctggt tctcttgtct ctcccaaccc 1080
atattccgta ttacacctcg tcgtgggtcat ttttttggtc agagttttat ttaattctaa 1140
atttcctaac taaaatttca ga                                     1162

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<210> 43

<211> 1500

<212> DNA

<213> *Caenorhabditis elegans*

<400> 43

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aaaatgccaa acgatccatc ggataatcaa ctgaaaacct acaaggagac gtatccaaaa 60
ccccaagtga tcacaacttc aaatggagct ccgatctact cgaagaccgc cgtgctcacc 120
gccgggcggc gtggcccaat gctcatgcaa gatgtagttt atatggatga gatggctcat 180
ttcgatcgtg aacgtatccc cgagcgtgtc gttcatgcc aaggagccgg agcccatgga 240
tacttcgagg tcacccatga catcaccaag tactgtaagg ccgatatgtt caacaaggtc 300
ggaaaacaga caccacttct cgttcgtttt tcaacggtcg ctggagaatc gggatccgct 360

```

```

gatactgtcc gcgatccacg tggattctct ctcaaattct ataccgagga gggtaactgg 420
gatctgggtg gaaataacac tccgatcttc ttcattcgtg acgcaatcca ctttccgaat 480
ttcattcatg ccctgaagcg caatccacag actcacatga gggatccgaa tgcgctcttc 540
gatttctgga tgaatcgccc tgaatccatt catcaggtga tgttcctcta ctcggatcgt 600
ggaattcctg atggattccg ttttatgaat ggatacggag cgcatacttt caagatggtc 660
aacaaggagg gaaatccgat ttattgtaaa ttccatttca agcctgctca aggttccaag 720
aatctcgatc caactgacgc tggaaagctc gcctcttcgg atccagacta tgcgatccgc 780
gacctgttca atgccattga gtcaagaaat ttcccggaaat ggaagatggt cattcaagtg 840
atgacattcg aacaagctga gaaatgggag ttcaatccat ttgatgtcac taaagtttgg 900
ccacacgggtg attaccact gatcgaggtc ggcaagatgg tgctgaacag gaatgtgaag 960
aattatttctg ctgaggtcga acaagccgcc ttctgcccgg cccacatcgt cccaggaatc 1020
gagttctcgc cagacaagat gctccaaggg cgtatcttct cctacacgga cacgcattac 1080
catcgccttg gaccaaacta cattcagctt ccagtcaact gcccgtaccg ctcccgtgct 1140
cataccactc aacgcgatgg tgcaatggct tatgaaagcc agggagatgc gccgaattac 1200
ttcccgaaca gtttccgcgg ataccgtact cgtgatgatg tgaaggagtc gacatttcag 1260
acgactggag atgttgatcg ttatgagact ggagacgatc acaactacga gcagccacgt 1320
cagttctggg agaaagtgt caaggaggag gagagagatc ggctcgttgg gaatttggct 1380
agtgatttgg gtggctgttt ggaggaaatt caaaatggaa tgggtcaaaga gttcacgaaa 1440
gttcatccgg atttcggaag tgctcttcgc catcagctct gccagaagaa gcattaaatt 1500

```

<210> 44

<211> 497

<212> PRT

<213> *Caenorhabditis elegans*

<400> 44

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Met Pro Asn Asp Pro Ser Asp Asn Gln Leu Lys Thr Tyr Lys Glu Thr
1          5          10          15
Tyr Pro Lys Pro Gln Val Ile Thr Thr Ser Asn Gly Ala Pro Ile Tyr
20          25          30
Ser Lys Thr Ala Val Leu Thr Ala Gly Arg Arg Gly Pro Met Leu Met
35          40          45
Gln Asp Val Val Tyr Met Asp Glu Met Ala His Phe Asp Arg Glu Arg
50          55          60
Ile Pro Glu Arg Val Val His Ala Lys Gly Ala Gly Ala His Gly Tyr
65          70          75          80
Phe Glu Val Thr His Asp Ile Thr Lys Tyr Cys Lys Ala Asp Met Phe
85          90          95
Asn Lys Val Gly Lys Gln Thr Pro Leu Leu Val Arg Phe Ser Thr Val
100         105         110
Ala Gly Glu Ser Gly Ser Ala Asp Thr Val Arg Asp Pro Arg Gly Phe
115         120         125
Ser Leu Lys Phe Tyr Thr Glu Glu Gly Asn Trp Asp Leu Val Gly Asn
130         135         140
Asn Thr Pro Ile Phe Phe Ile Arg Asp Ala Ile His Phe Pro Asn Phe
145         150         155         160
Ile His Ala Leu Lys Arg Asn Pro Gln Thr His Met Arg Asp Pro Asn
165         170         175
Ala Leu Phe Asp Phe Trp Met Asn Arg Pro Glu Ser Ile His Gln Val
180         185         190
Met Phe Leu Tyr Ser Asp Arg Gly Ile Pro Asp Gly Phe Arg Phe Met
195         200         205
Asn Gly Tyr Gly Ala His Thr Phe Lys Met Val Asn Lys Glu Gly Asn
210         215         220
Pro Ile Tyr Cys Lys Phe His Phe Lys Pro Ala Gln Gly Ser Lys Asn
225         230         235         240

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[illegible]

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<210> 45
<211> 1062
<212> DNA
<213> Caenorhabditis elegans
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<400> 45						
tatttcgcaga	aaaaagtcgt	tgcaaacatt	cgttttttata	tgttttttctt	tgagaaagcg	60
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attcagagag	gttgagaatt	attttcaaaa	acattcaatg	ttttcccttg	gagtgactat	180
gcaaatatga	aaatgttttc	caaaaatatt	tg gatgccct	gataaaaagt	aggtgaaatt	240
tcgcagggga	acatcatatt	aaaatgttga	attttttagaa	gaaatggaaa	tg tttgtcgg	300
tggtatgctc	gaatatttga	gatattatat	at ttactgtt	aaatccgaaa	tttttgacaa	360
acggaaaaaa	tttgtgtcga	aatactacat	tttcgataac	acaaaggtac	ttccataaca	420
cttataaaaa	ctgtttgact	atcttatttc	aggaaaaaaa	aatccaagaa	taaacatttt	480
tcagaatttg	aactttctaa	tggctgatta	ataaaaacaaa	gttataacaac	tattcaaagc	540
agttgctcaa	tctggcattt	tcttgtgttt	ttttttgaat	at ttcattcag	caagatgttg	600
ataattttgt	gttaattcta	attgtttttct	acaatttttc	aaaccgaaaa	ttgacctttg	660
actttgttta	ctttgttctc	gtgggttaac	tg tttactga	tttctattgc	tg tttgatgag	720
gtctttgatc	aaatttgtat	tg tttttata	ctgcataattg	cttcaattct	aaatcatcta	780
atatattgtc	aaacaacttc	ttgtttttttt	tttcattcaa	aacttctgca	aaaacgttct	840
cttaacaaag	gttcacacaa	caactctcct	ctccatctct	ttctctcaac	aacaatgtgc	900

```

tggccttgca tgtttgccag tgcgggttgt ttacgcgttt tcaagatttt tggctctccta 960
tctaacgtcc cgaaatgcat tttttccttt catttggttt ttttctgttc gagaaaagtg 1020
accgtttgtc aaatcttcta attttcagtg aataaaatgc tg 1062

```

<210> 46

<211> 815

<212> DNA

<213> *Caenorhabditis elegans*

<400> 46

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cgtttgtcaa atcttctaata tttcagtgaa taaaatgctg caatctactg ctcgcactgc 60
ttcaaagctt gttcaaccgg ttgcgggagt tctcgccgtc cgctccaagc acactctccc 120
agatctccca ttcgactatg cagatttgga acctgtaatc agccatgaaa tcatgcagct 180
tcatcatcaa aagcatcatg ccacctacgt gaacaatctc aatcagatcg aggagaaact 240
tcacgaggct gtttcgaaag ggaatctaaa agaagcaatt gctctccaac cagcgctgaa 300
attcaatggt ggtggacaca tcaatcattc tatcttctgg accaacttgg ctaaggatgg 360
tggagaacct tcaaaggagc tgatggacac tattaagcgc gacttcggtt ccctggataa 420
cttgcaaaaa cgtcttttctg acatcactat tgcggttcaa ggctctggct ggggatgggt 480
gggatattgc aagaaagaca aaatcttgaa gatcgccacc tgtgcaaacc aggatccttt 540
ggaaggaatg gtcccacttt ttggaattga cgtttgggag cagcgctact acttgagta 600
caaaaatgtc cgccagact atgtccatgc tatttggaag attgccaact ggaagaatat 660
cagcgagaga tttgccaatg ctcgacaata aaagcaggaa atattggaat tttcgggttt 720
acgaaaatat tgaagataat tcagatgtag tttaaaacgc tgagaatttg tatttttgta 780
attgtttaa taaaagaacg cacagttttt tctta 815

```

<210> 47

<211> 218

<212> PRT

<213> *Caenorhabditis elegans*

<400> 47

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Met Leu Gln Ser Thr Ala Arg Thr Ala Ser Lys Leu Val Gln Pro Val
1          5          10          15
Ala Gly Val Leu Ala Val Arg Ser Lys His Thr Leu Pro Asp Leu Pro
20          25          30
Phe Asp Tyr Ala Asp Leu Glu Pro Val Ile Ser His Glu Ile Met Gln
35          40          45
Leu His His Gln Lys His His Ala Thr Tyr Val Asn Asn Leu Asn Gln
50          55          60
Ile Glu Glu Lys Leu His Glu Ala Val Ser Lys Gly Asn Leu Lys Glu
65          70          75          80
Ala Ile Ala Leu Gln Pro Ala Leu Lys Phe Asn Gly Gly Gly His Ile
85          90          95
Asn His Ser Ile Phe Trp Thr Asn Leu Ala Lys Asp Gly Gly Glu Pro
100         105         110
Ser Lys Glu Leu Met Asp Thr Ile Lys Arg Asp Phe Gly Ser Leu Asp
115         120         125
Asn Leu Gln Lys Arg Leu Ser Asp Ile Thr Ile Ala Val Gln Gly Ser
130         135         140
Gly Trp Gly Trp Leu Gly Tyr Cys Lys Lys Asp Lys Ile Leu Lys Ile
145         150         155         160
Ala Thr Cys Ala Asn Gln Asp Pro Leu Glu Gly Met Val Pro Leu Phe
165         170         175
Gly Ile Asp Val Trp Glu His Ala Tyr Tyr Leu Gln Tyr Lys Asn Val
180         185         190
Arg Pro Asp Tyr Val His Ala Ile Trp Lys Ile Ala Asn Trp Lys Asn
195         200         205

```

Ile Ser Glu Arg Phe Ala Asn Ala Arg Gln
 210 215

<210> 48
 <211> 851
 <212> DNA
 <213> *Caenorhabditis elegans*

<400> 48
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 tcgcttggtg aatggacttt attttgataa gttcatttta atttttctaa caatctcatc 180
 actagctcat gatgacaatt gcaaagaaat tcgtcatata gaggggaaaa atgctgacaa 240
 atattgaaaa gccttcagga gagatgtaga gacgtaggag tagagacaga acataaattt 300
 gagaagcttg tagggagaat agacatagag ttacccatggg aaaaacgctc gcattttcca 360
 tttaacgaga ttttctagat cacaacattt tgtgatccgt tgtgcgaaaa tcaagctttt 420
 tatcaaactt ttatcgtctg ttcatctctt ctgacaatct ttattatctt attaaacttg 480
 actaattgta ttgaaagtat ttttttagat gcgaacgaag ttccattttt catgacttaa 540
 catctcttaa cgttagtga atttttgaat tccaattagg actacggtag gagttctgta 600
 gttgatttcc tgaacacttg ttttgtaacc tttctgaacg gattttaata tttctaaaat 660
 tttaaattgc aaatctgagt cctattaaaa gatgtttcat ccgtaaaacc aacaaacaaa 720
 atatcacttt atcatcatga gatttaattg ttcttttga ttttctgaat tgttgtaact 780
 tccttcaaac gacttattga actgatgtaa ctttccttct aatgttatca tttgtatttt 840
 tttgcagaat g 851

<210> 49
 <211> 2297
 <212> DNA
 <213> *Caenorhabditis elegans*

<400> 49
 tttgcagaat gggctcttttg acgaaaggta gtccggttgac gtgggcagaa accgtaccgc 60
 acattgatta tatcaagaag cacggaattg ctcaattcat caatctctac catcgtctga 120
 aatcaagaca cggagatcaa ttgaaatggg gagatgagat tgaatacact attgtaaaaat 180
 ttgatgacgc aaacaagaaa gttcgcgtgt cgtgcaaagc tgaagagctt ctttaataagt 240
 tacaagccga agagcaggtg aatgcgatgc ttggaactgc caatcgattc ctttggagac 300
 cagaattcgg atcctacatg atcgaggga cccccggaat gccttacgga ggtctcatcg 360
 cttgcttcaa cattgtcgag gcaaacatga aattgcgcag acaggctcgc aaaaagttat 420
 taaagaagga tgaacatgt ctatcgatat cgttcccatc tcttgagata cctggattca 480
 cattcccgga agtagcagct gatagaaaga atgatgatgc agctaatagc gttttctggc 540
 cagaacaagc tgtattcttg ggccatccac gtttcaagaa tcttaccaaa aatattaaag 600
 gtgcgagagg aagtaaagta gctatcaacg tcccgatatt caaggatacg aacaccccca 660
 gtccattcgt tgaagattta tctgcacttg gaggtcctga tgatactcgt gatgcgaaac 720
 ctgatcacat ttatatggat catatgggat tcggaatggg gtgctgttgt cttcaagtca 780
 ctttccaggc tgtgaacgct gatgaagcca gatggttgta cgatcagctg acaccgatta 840
 caccgattct actggcactc tctgccgcca caccaatctt ccgtggaaaa ttatccaatg 900
 tcgattctag atgggatatc attagtgcaa gtgtcgacga tcgtacaccg gaggaaagag 960
 gattggaacc tctcaagaat tcgaaatggg ttattgataa gagtcgctac gactccacgg 1020
 actgttacat ttatccatgt tctgttggct acaatgatat tcctcttcaa tacgacgaaa 1080
 ccatatataa acaactaatt gatggaaata ttgatgagcc actggcaaaa catattgcgc 1140
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 aaagcagtga acactttgaa acaattcaat catcgaattg gatgaacatg cgattcaagc 1260
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 tgatctcctt caggctgaca tatttgatgc caatttcaat gggtactgaa aatatgaagc 1440
 gtgctcagca aaaagatgca gttctcaatc agaaattcct gttcagaaaa ggattggctg 1500

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agtgc aaatc  tgctccc gaa  aatttgaa ag  gatcggagaa atgtggacca cctagtcaag 1560
atattgaaga aatgtcgatt gatgagatta tcaatggaaa gaaaaatgga ttcccagggtc 1620
tcattttcact tattcgccaa tttctagatt ctgctgatgt tgatgtggat actcgggtgta 1680
cgattttctca atatttgaac tttatttcga aacgagcaac tggagagatt aatactttgg 1740
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aaatttaaac tctgaatttc taaatgcttg ttttttgagt agtaggaatc agtacgaatg 2220
gtacattaat ctgaaaataa tttcatattt atgtacaatg ctcccctgaa tccatcatat 2280
aattattatc cgtgttg                                     2297

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<210> 50

<211> 654

<212> PRT

<213> *Caenorhabditis elegans*

<400> 50

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Met Gly Leu Leu Thr Lys Gly Ser Pro Leu Thr Trp Ala Glu Thr Val
 1              5              10              15
Pro His Ile Asp Tyr Ile Lys Lys His Gly Ile Ala Gln Phe Ile Asn
              20              25              30
Leu Tyr His Arg Leu Lys Ser Arg His Gly Asp Gln Leu Lys Trp Gly
              35              40              45
Asp Glu Ile Glu Tyr Thr Ile Val Lys Phe Asp Asp Ala Asn Lys Lys
 50              55              60
Val Arg Val Ser Cys Lys Ala Glu Glu Leu Leu Asn Lys Leu Gln Ala
65              70              75              80
Glu Glu Gln Val Asn Ala Met Leu Gly Thr Ala Asn Arg Phe Leu Trp
              85              90              95
Arg Pro Glu Phe Gly Ser Tyr Met Ile Glu Gly Thr Pro Gly Met Pro
              100              105              110
Tyr Gly Gly Leu Ile Ala Cys Phe Asn Ile Val Glu Ala Asn Met Lys
              115              120              125
Leu Arg Arg Gln Val Val Lys Lys Leu Leu Lys Lys Asp Glu Thr Cys
              130              135              140
Leu Ser Ile Ser Phe Pro Ser Leu Gly Val Pro Gly Phe Thr Phe Pro
145              150              155              160
Glu Val Ala Ala Asp Arg Lys Asn Asp Asp Ala Ala Asn Ser Val Phe
              165              170              175
Trp Pro Glu Gln Ala Val Phe Leu Gly His Pro Arg Phe Lys Asn Leu
              180              185              190
Thr Lys Asn Ile Lys Gly Arg Arg Gly Ser Lys Val Ala Ile Asn Val
              195              200              205
Pro Ile Phe Lys Asp Thr Asn Thr Pro Ser Pro Phe Val Glu Asp Leu
              210              215              220
Ser Ala Leu Gly Gly Pro Asp Asp Thr Arg Asp Ala Lys Pro Asp His
225              230              235              240
Ile Tyr Met Asp His Met Gly Phe Gly Met Gly Cys Cys Cys Leu Gln
              245              250              255
Val Thr Phe Gln Ala Val Asn Val Asp Glu Ala Arg Trp Leu Tyr Asp
              260              265              270
Gln Leu Thr Pro Ile Thr Pro Ile Leu Leu Ala Leu Ser Ala Ala Thr
              275              280              285

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Pro Ile Phe Arg Gly Lys Leu Ser Asn Val Asp Ser Arg Trp Asp Ile
290                295                300
Ile Ser Ala Ser Val Asp Asp Arg Thr Pro Glu Glu Arg Gly Leu Glu
305                310                315                320
Pro Leu Lys Asn Ser Lys Trp Val Ile Asp Lys Ser Arg Tyr Asp Ser
                325                330                335
Thr Asp Cys Tyr Ile Tyr Pro Cys Ser Val Gly Tyr Asn Asp Ile Pro
                340                345                350
Leu Gln Tyr Asp Glu Thr Ile Tyr Lys Gln Leu Ile Asp Gly Asn Ile
                355                360                365
Asp Glu Pro Leu Ala Lys His Ile Ala His Met Phe Ile Arg Asp Pro
370                375                380
His Gln Val Phe Arg Glu Arg Ile Glu Gln Asp Asp Glu Lys Ser Ser
385                390                395                400
Glu His Phe Glu Thr Ile Gln Ser Ser Asn Trp Met Asn Met Arg Phe
                405                410                415
Lys Pro Pro Pro Pro Asp Ala Pro Glu Ile Gly Trp Arg Val Glu Phe
                420                425                430
Arg Pro Thr Glu Val Gln Leu Thr Asp Phe Glu Asn Ala Ala Tyr Cys
                435                440                445
Cys Phe Val Val Leu Leu Thr Arg Met Met Ile Ser Phe Arg Leu Thr
450                455                460
Tyr Leu Met Pro Ile Ser Met Val Thr Glu Asn Met Lys Arg Ala Gln
465                470                475                480
Gln Lys Asp Ala Val Leu Asn Gln Lys Phe Leu Phe Arg Lys Gly Leu
                485                490                495
Ala Glu Cys Lys Ser Ala Pro Glu Asn Leu Lys Gly Ser Glu Lys Cys
500                505                510
Gly Pro Pro Ser Gln Asp Ile Glu Glu Met Ser Ile Asp Glu Ile Ile
515                520                525
Asn Gly Lys Lys Asn Gly Phe Pro Gly Leu Ile Ser Leu Ile Arg Gln
530                535                540
Phe Leu Asp Ser Ala Asp Val Asp Val Asp Thr Arg Cys Thr Ile Ser
545                550                555                560
Gln Tyr Leu Asn Phe Ile Ser Lys Arg Ala Thr Gly Glu Ile Asn Thr
                565                570                575
Leu Ala His Trp Thr Arg Gly Phe Val Gln Ser His Pro Ala Tyr Lys
580                585                590
His Asp Ser Asp Val Asn Asp Asn Ile Val Tyr Asp Leu Leu Lys Lys
595                600                605
Met Asp Ala Ile Ser Asn Gly Glu Asp His Cys Glu Lys Leu Leu Gly
610                615                620
Cys Tyr Arg Ser Lys Thr Asp His Ala Ile Ser Ala Ala Val Arg Lys
625                630                635                640
Ala Glu Glu His Met Ile Val Ser Ser Gln Lys Arg Ala His
                645                650

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<210> 51

<211> 15

<212> PRT

<213> *Caenorhabditis elegans*

<400> 51

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Thr Thr Asp Ser Ser Ser Thr Cys Ser Arg Leu Ser Ser Glu Ser
1                5                10                15

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<210> 52
 <211> 15
 <212> PRT
 <213> Homo sapiens

<220>
 <221> PHOSPHORYLATION
 <222> 1, 5, 9, 13
 <223> Can be phosphorylated

<400> 52
 Ser Gly Ile His Ser Gly Ala Thr Thr Thr Ala Pro Ser Leu Ser
 1 5 10 15

<210> 53
 <211> 23
 <212> PRT
 <213> Caenorhabditis elegans

<220>
 <221> PHOSPHORYLATION
 <222> 15
 <223> Can be phosphorylated

<400> 53
 Asp Cys Thr Thr Asp Ser Ser Ser Thr Cys Ser Arg Leu Ser Ser Glu
 1 5 10 15
 Ser Pro Arg Tyr Thr Ser Glu
 20

<210> 54
 <211> 23
 <212> PRT
 <213> Caenorhabditis elegans

<220>
 <221> PHOSPHORYLATION
 <222> 15
 <223> Can be phosphorylated

<400> 54
 Asp Cys Thr Thr Asp Ser Ser Ser Thr Cys Ala Arg Leu Ser Ser Glu
 1 5 10 15
 Ser Pro Arg Tyr Thr Ser Glu
 20

<210> 55
 <211> 42
 <212> DNA
 <213> Caenorhabditis elegans

<400> 55
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<210> 56
<211> 45
<212> DNA
<213> *Caenorhabditis elegans*

<400> 56
cacctctgtc atcatgatga tttttggagc attatcatca tttct 45

<210> 57
<211> 45
<212> DNA
<213> *Caenorhabditis elegans*

<400> 57
cacctctgtc atcatgatga ttttttagagc attatcatca tttct 45